

REMARKS

In response to the office action mailed September 28, 2007, Applicants have amended claims 1, 3, 7 and 13-15, and added claims 16-18. Claims 2 and 12 are canceled. Claims 4-6 and 8-11 were previously presented. Claims 1, 3, 5-11 and 13-18 are presented for examination.

Claim Objections

The Examiner objected to the claims 1, 3, 7 and 9 because of the following informalities:

In claim 1, "the output terminal" should be -- the first output terminal --; and "configured connect" should be --configured to connect --. Applicants have amended claim 1, as set forth above, to correct these informalities.

In claim 3, the Examiner suggests changing claim 3, line 3 to: --between the band-pass filter thereof and the corresponding output terminal--. As set forth above, Applicants have amended claim 3 as suggested by the Examiner.

In claim 7, "at least on" should be --at least one--. Applicants have amended claim 7, as set forth above, to correct this informality.

In claim 9, "downstream" should be --upstream--. Applicants have amended claim 9, as set forth above, to correct this informality.

35 U.S.C. §112

Claims 12, 14 and 15 were rejected as being indefinite "for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention."

Claim 12 has been canceled, and as such, the rejection is now moot with respect to claim 12.

Applicants have amended claims 14 and 15, as set forth above, to address the Examiner's rejection of these claims under 35 U.S.C. §112, second paragraph. Applicants respectfully request reconsideration and withdrawal of the rejection of claims 14 and 15 under 35 U.S.C. §112, second paragraph, in view of the above claim amendments.

35 U.S.C. § 102

Claims 1, 5, 10 and 11 were rejected as being anticipated by EP 0 880 227 (Ella '227). As shown above, Applicant has amended claim 1 to recite "a balun in at least one of the first and second signal paths." Ella '227 does not describe or suggest each and every limitation of claim 1.

Ella '227 describes a duplexer device 71 that includes a plurality of filter blocks (TX1'), (TX2'), (RX1'), (RX2'). (See, e.g., Ella '227 at ¶ [0115]; see also FIG. 16). Each of the filter blocks is coupled between an antenna port (A1') and an associated amplifier (AMP1), (AMP2), (AMP3), (AMP4). (See, e.g., id. at ¶ [0017]). However, Ella '227 does not describe or suggest "a balun in at least one of the first and second signal paths." Nor does Ella '227 indicate that such an arrangement would be in any way beneficial. Nor would a person of ordinary skill in the art have had any reason to modify the device describe in Ella '227 in a way to provide such an arrangement.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 1, 5, 10 and 11 as anticipated by Ella '227.

Claims 1-3, 6 and 10 were rejected as being anticipated by U.S. Pub. 2003/0060170 (Tikka). As shown above, Applicant has amended claim 1 to recite "a first band-pass filter ... connected directly to the antenna connection, ... a second band pass filter ... connected directly to the antenna connection." Tikka does not describe or suggest each and every limitation of claim 1.

Tikka describes a duplexer that includes first and second passband filters 10, 10' connected between an antenna port (i.e., second port 120') and first and third ports 110', 130'. (See, e.g., Tikka at ¶ [0049]; see also FIG. 6). However, Tikka does not describe or suggest first and second band-pass filters, which are both "connected directly to [an] antenna connection." Rather, as shown in FIG. 6 of Tikka, a balun 70 is connected between the antenna 66 and the first and second passband filters 10, 10'. This is not merely a trivial distinction. The balun 70 converts the single-ended antenna port to a balanced port within the duplexer. (See, e.g., id. at ¶ [0054]). The balanced filters shown and described by Tikka work with symmetrical signals, and, thus, need a balun between the antenna 66 and the filter 10, 10' to convert the balanced ports of the filters to single-ended ports for connection to a common antenna.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 1-3, 6 and 10 as anticipated by Tikka.

Claims 13-15 were rejected as being anticipated by U.S. Pat. 6,125,266 (Matero). Claims 13-15 were also rejected as being anticipated by U.S. Pat. 6,920,324 (Atarius). As shown above,

Applicant has amended claim 13 to recite “a first duplexer ... comprising: a first band-pass filter directly connected to the antenna; a second band-pass filter; and a first quarter-lambda ($\lambda/4$) line between the antenna and the second band-pass filter,” and “a second duplexer ... comprising: a third band-pass filter directly connected to the antenna; a fourth band-pass filter; and a second quarter-lambda ($\lambda/4$) line between the antenna and the fourth band-pass filter.” Both Matero and Atarius fail to describe or suggest each and every limitation of claim 1.

In this regard, the Office Action (at pages 6 and 7) equates the duplexers 58 and 60 of Matero, FIG. 3A, and/or the duplexers 56, 58 of Atarius, FIG. 8, to the first and second duplexers of the claims. However, both Matero and Atarius fail to describe or suggest first and second duplexers with the claimed features. Specifically, Matero and Atarius fail to describe or suggest “a first duplexer ... comprising: a first band-pass filter directly connected to the antenna; a second band-pass filter; and a first quarter-lambda ($\lambda/4$) line between the antenna and the second band-pass filter,” and/or “a second duplexer ... comprising: a third band-pass filter directly connected to the antenna; fourth band-pass filter; and a second quarter-lambda ($\lambda/4$) line between the antenna and the fourth band-pass filter.” Nor does Matero and/or Atarius indicate that such an arrangement would be in any way beneficial. Nor would a person of ordinary skill in the art have had any reason to modify the devices described by Matero and/or Atarius in a way to provide such an arrangement.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 13-15 as anticipated by Matero, and the rejection of claims 13-15 as anticipated by Atarius.

35 U.S.C. § 103

Claim 6 was rejected as being anticipated by or, in the alternative, as being obvious over Ella '227. As discussed above, Ella '227 fails to describe or suggest each and every limitation of claim 1. Claim 6 depends from claim 1, and thus is patentable for at least the reasons discussed above. Applicants request reconsideration and withdrawal of the rejection of claim 6 over Ella '227 in view of the amendments to claim 1 and the remarks submitted above.

Claims 1-6, 10 and 11 were rejected over U.S. Pat. 6,670,866 (Ella '866) in view of Tikka. As discussed above, Applicant has amended claim 1 to recite "a first band-pass filter ... connected directly to the antenna connection, ... a second band pass filter ... connected directly to the antenna connection." Ella '866 and Tikka, whether taken alone, or in any proper combination, fail to describe or suggest each and every feature of Applicants' claim 1.

The Office Action (at page 9) apparently equates the lattice filters 150, 150' of Ella '866, FIG. 11, to the first and second band-pass filters of claim 1. However, Ella '866 still does not disclose or suggest first and second band-pass filters which are "connected directly to [an] antenna connection." (Emphasis added). Rather, as shown in FIG. 11 of Ella '866, a balun 10 is coupled between an antenna port 220 and the lattice filters 150, 150'. The balanced filters shown and described by Ella '866 work with symmetrical signals and thus need a balun between the antenna port 220 and the lattice filters 150, 150'.

The Examiner acknowledges that Ella '866 does not describe a second output terminal and apparently adds Tikka to make up for this deficiency. (See, e.g., Office Action of September

28, 2007 at pages 9-10). However, Tikka, relied on for its teaching that “transmitting and receiving filter paths [can be converted] to be either both receiving paths, or ... both transmitting paths,” does not remedy the deficiencies of Ella ‘866 as discussed above. (See, e.g., Office Action of September 28, 2007 at pages 9-10). Specifically, as addressed above, Tikka does not describe or suggest first and second band-pass filters, which are both “connected directly to [an] antenna connection.” (Emphasis added). Accordingly, even if Ella ‘866 were combined with Tikka in the manner suggested by the Office Action, the resulting hypothetical combination would still fail to describe or suggest the foregoing features of the claims.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 1-6, 10 and 11 over Ella ‘866 in view of Tikka.

Claims 1, 7-9 and 12 were rejected over either Matero or Atarius in view of U.S. Pat. 6,351,236 (Hasler). As discussed above, Applicant has amended claim 1 to recite “a balun in at least one of the first and second signal paths.” Matero, Atarius, and Hasler, whether taken alone, or in any proper combination, fail to describe or suggest each and every feature of Applicants’ claim 1.

Matero describes a dual band RF transceiver 10 that includes two duplexers 58, 60 connected to an antenna 2G. (See, e.g., Matero at col. 4, lines 5-10; see also FIG. 3A). Behind the duplexers 58, 60 in each of the transmission and reception paths are arranged amplifiers (i.e., low noise amplifiers 5, 6, and power amplifiers 52, 54) and filters 7, 8, 48, 50 each connected behind one of the amplifiers. (See, e.g., id. at col. 4, lines 8-10; see also, id. at col. 4, lines 45-51). However, Matero does not describe or suggest “a balun in at least one of the first and

second signal paths.” Atarius shows and describes two duplexers 56, 58 connected to a diplexer 45. (See, e.g., Atarius at col. 4, lines 2-4; see also FIGS. 2 and 8). Behind each of the duplexers 58, 60 is arranged a low noise amplifier 64, 78 and a power amplifier 108, 116. (See, e.g., id. at col. 4, lines 5-27). Each of the low noise and power amplifiers 64, 78, 108, 106 is connected in series with an associated band pass filter 254, 264, 276, 282. (See, e.g., id. at col. 11, lines 19-43; see also FIG. 8). However, Atarius also fails to describe or suggest “a balun in at least one of the first and second signal paths.” The circuits described by Atarius and Matero work with unsymmetrical signals, and, thus, there is no reason for either to include a balun as required by claim 1. Nor does Matero and/or Atarius indicate that such an arrangement would be in any way beneficial. Nor would a person of ordinary skill in the art have had any reason to modify the devices described by Matero and/or Atarius in a way to provide such an arrangement.

Hasler, relied on for its teaching of using a thin film resonator filter (e.g., the “thin film bulk acoustic wave resonator filters” of Haslers claim 2) as a band select filter 8, does not remedy the deficiencies of Matero and/or Atarius, as discussed above. Accordingly, even if Matero and/or Atarius were combined with Hasler as suggested by the Office Action, the resulting hypothetical combination would still fail to disclose or to suggest the foregoing features of the claims.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 1, 7-9 and 12 as unpatentable over either Matero or Atarius in view of Hasler.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or

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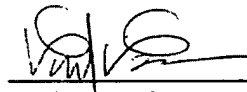
concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Please charge any additional fees or credit any overpayment, to deposit account 06-1050, referencing Attorney Docket No. 14219-088US1.

Respectfully submitted,

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